PATENT
YR1-9

12/9/03
A. Cowan

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

In re Application of: Lenny Low et al
Serial No. 09/822,073
Filed: March 30, 2001
For: Heat Transfer of a Remote Heat Source Using a Loop Heat Pipe

: Date: December 2, 2003
: Group Art Unit: 3753
: Examiner: C. M. Atkinson
:
:

APPEAL BRIEF TRANSMITTAL LETTER

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Enclosed is an Appeal Brief, in triplicate, for the above-identified patent application.

___ Applicant petitions for an extension of time for month(s). If an additional extension of time is required, please consider this a petition therefor.
Fee:

___ An extension for month(s) has already been secured; the fee paid therefore is deducted from the total fee due for the total months of extension now requested.
Extension fee due with this request:

_X_ Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition for extension of time.

___ The Appeal Brief Fee was paid in a prior appeal in which there was no decision on the merits by the Board of Appeals.

_X_ The Appeal Brief Fee is enclosed herewith. Fee: $330.00

_X_ The total fee due is $330.00

_X_ Address all correspondence to Joyce Kosinski, Karambelas & Associates, 655 Deep Valley Drive, Suite 303, Rolling Hills Estates, CA 90274.

This letter is submitted in triplicate.

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Respectfully submitted,

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PATENT
Docket No. YR1-9

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT:	Lenny Low et al
SERIAL NUMBER:	09/822,073
FILING DATE:	March 30, 2001
FOR:	Heat Transfer of a Remote Heat Source Using a Loop Heat Pipe
GROUP ART UNIT:	3753
EXAMINER:	C. M. Atkinson

CERTIFICATE OF MAILING
UNDER 37 CFR 1.8

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Identification of Transmitted Papers

Appeal Brief in triplicate, Appeal Brief Transmittal Letter in triplicate, Check in the Amount of $330.00, return receipt postcard

I hereby certify that the above-identified correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to Mail Stop Appeal Brief-Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on **December 2, 2003**.

Joyce E. Kosinski
Depositor

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#21

PATENT
YR1-9

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS

Appeal No._____

In re Application of: LENNY LOW ET AL
Serial No.: 09/822,073
Filed: March 30, 2001
For: HEAT TRANSFER OF A REMOTE HEAT SOURCE USING A LOOP HEAT PIPE

APPELLANTS' BRIEF ON APPEAL

Anthony W. Karambelas
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS

In re Application of: LENNY LOW ET AL : Date: December 2, 2003
Serial No.: 09/822,073 : Group Art Unit: 3753
Filed: March 30, 2001 : Examiner: C. M. Atkinson
For: HEAT TRANSFER OF A REMOTE HEAT:
SOURCE USING A LOOP HEAT PIPE :

APPELLANTS' BRIEF ON APPEAL

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This appeal is taken from the decision of the Examiner in the Office Action dated June 17, 2003 finally rejecting Claims 1-6 in Paper No. 13 of the above-identified patent application. This brief is submitted in accordance with the provisions of 37 C.F.R. §1.192.

REAL PARTY IN INTEREST

The real party in interest is Space Systems/Loral, Inc. which acquired rights to the present application by way of an assignment from the inventors.

RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to appellants, appellants' legal representative, or the assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

STATUS OF CLAIMS

Claims 1-6 are currently pending in this application and were finally rejected in the Office Action dated June 17, 2003. Appellants appeal from this final rejection.

STATUS OF AMENDMENTS

With regard to the status of amendments, four Office Actions were issued during prosecution of this application. The specification, drawings and claims 1-6 were amended in response to the first Office Action dated March 13, 2002. Claims 1, 3 and 5 were amended in response to the final Office Action dated June 18, 2002. Claims 1, 3 and 5 were again amended with the Request for Continued Examination filed in response to the final Office Action dated June 18, 2002. No claim amendments were made in response to the Office Action dated March 4, 2003. No claim amendments were made in response to the Office Action dated June 17, 2003.

SUMMARY OF INVENTION

In the specification on page 1, line 20 through page 2, line 15 the following Summary of the Invention is presented: The present invention provides for heat transfer systems and methods that use a loop heat pipe to transfer heat from a remotely located heat source to a spacecraft thermal radiator or other heat dissipating apparatus. The loop heat pipe accomplishes this heat transfer task in a more weight efficient and with lower impact to the overall spacecraft configuration than conventional techniques.

More particularly, the heat transfer system is used with a heat dissipation component or heat source not located on a heat pipe panel or mounted on a thermal radiator. The loop heat pipe is used to transport heat from the remotely located heat dissipation component or heat source the thermal radiator or heat pipe panel.

The loop heat pipe is a two phase heat transfer device which has a discrete evaporator (where heat goes into the device) and a discrete condenser (where heat is rejected by the device). The loop heat pipe uses thin walled tubing to connect the evaporator and condenser. The thin walled tubing allows

the loop heat pipe to be flexible unlike conventional heat pipes which are rigid. The flexibility of the loop heat pipe offers significant advantages in terms of routing, accommodating design changes and bending the transport lines after installation to avoid other spacecraft components.

ISSUES

The first issue in this appeal is whether the previously filed amendment to the specification in Paper No. 3 filed April 1, 2002 obviates the Examiner's objection in lieu of a drawing correction. The next issue in this appeal is whether the terminology "a remotely-located heat source disposed....at a location that is remote from the heat dissipating system...; and a loop heat pipe thermally coupled between the heat source and the heat dissipating system" is adequately disclosed to satisfy 37 CFR 1.71. The next issue in this appeal is whether claims 1-6 are patentable over the rejection under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. The final issue in this appeal is whether claims 1-6 are patentable over the rejection under 35 U.S.C. 102(b) as being anticipated by Esposto.

GROUPING OF CLAIMS

With regard to the specific grounds of rejection that are in issue, it is respectfully submitted that Claims 1-6 stand or fall together.

DESCRIPTION OF REFERENCE

In U. S. 5,743,325 to Esposto, filed May 22, 1997, issued April 28, 1998, there is disclosed a closed loop heat pipe transport design for a deployment application having a flexible section which connects to a payload structure and a deployable structure. The flexible section folds over itself while the deployable structure is stowed. Upon rotation of the deployable structure around a predetermined axis, the flexible section unfolds, with a portion of the flexible section passing through the predetermined axis. When the deployable

structure has completed its rotation and is fully deployed, the components of the flexible section will lie in substantially the same plane.

ARGUMENT

The Examiner has objected to the drawings in the case on appeal under 37 CFR 1.83(a) stating that the heat pipe panel must be shown or the features canceled from the claims and no new matter is to be entered.

Appellants respectfully submit that they have satisfied this requirement in a previously filed amendment to the specification in Paper No. 3 filed April 1, 2002 which states:

The paragraph starting at page 2, line 35, has previously been amended at page 3, line 4, by inserting reference numerals 12 and 13 after "panels" and before ",". Appellants respectfully submit that radiator panels 12 and 13 are designated in said paragraph as heat panels (12, 13), therefore obviating any necessity to amend the drawings and satisfies the Examiner's requirement that the heat pipe panel must be shown in the drawings. Appellants respectfully submit that heat panels 12 and 13 are shown in Figs. 1 and 2 and accordingly this objection to the drawings is obviated since no further amendment to the drawings is required.

The Examiner has objected to the specification under 37 CFR 1.71 because the originally filed specification fails to disclose "a remotely-located heat source disposed...at a location that is remote from the heat dissipating system...; and a loop heat pipe thermally coupled between the heat source and the heat dissipating system."

Appellants respectfully submit there is sufficient disclosure for the limitation "a remotely-located heat source disposed...at a location that is remote from the heat dissipating system" to be found in claims 3 and 5 as originally filed and at page 4, line 6 et seq., in the specification where it is stated "a heat source 14 is disposed 31 on a spacecraft 20 at a location that is remote from a thermal radiator (12, 13)" and is similarly mentioned several other places in the specification using alternative terminology.

Similarly, Appellants respectfully submit there is sufficient disclosure of "a loop heat pipe thermally coupled between the heat source and the heat

"dissipating system" to be found at page 4, line 7 et seq., wherein it is stated "A heat transfer system 10 comprising a loop heat pipe 10 is located thermally coupled 32 between the heat source 14 and the thermal radiator (12, 13). Heat generated by the heat source 14 is coupled 33 to the thermal radiator (12, 13) by way of the loop heat pipe 10." Appellants further respectfully submit that there is further support at page 4, line 11 et seq., where it is stated "Thus, a heat transfer system comprising a loop heat pipe and heat transfer method that transfers heat from a remotely located heat source to a spacecraft thermal radiator have been disclosed."

The Examiner has rejected claims 1-6 under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors at the time the application was filed had possession of the claimed invention. The Examiner states that with regard to claims 1, 3 and 5, the originally filed specification fails to disclose "a remotely-located heat source disposed...at a location that is remote from the heat dissipating system...; and a loop heat pipe thermally coupled between the...heat source and the heat dissipating system." Appellants respectfully submit that , for example, in claim 3, at line 2 it is claimed:

"heat dissipating apparatus for radiating heat into space;

"a heat source disposed at a location that is remote from heat dissipating apparatus; and

"a loop heat pipe thermally coupled between the heat source and the heat dissipating apparatus for coupling heat generated by the heat source to the heat dissipating apparatus."

Appellants respectfully submit further support may be found at page 4, line 6 et seq., in the specification where it is stated "A heat source 14 is disposed 31 on a spacecraft 20 at a location that is remote from a thermal radiator 12, 13. A heat transfer system 10 comprising a loop heat pipe 10 is thermally coupled 32 between the heat source 14 and the thermal radiator 12, 13. Heat generated by the heat source 14 is coupled 33 to the thermal radiator 12, 13 by way of the loop heat pipe 10."

Appellants respectfully submit that this subject matter is described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors at the time the application was filed had possession of the claimed invention. Appellants respectfully contend that the originally filed specification does disclose "a remotely located heat source disposed...at a location that is remote from the heat dissipating system...; and a loop heat pipe thermally coupled between the...heat source and the heat dissipating system" in the claims and in the specification as recited above which is hereby respectfully incorporated by reference. Accordingly, Appellants respectfully submit that this ground of rejection has been obviated.

The Examiner has rejected claims 1-6 under 35 U.S.C. 102(b) as being anticipated by Esposto U. S. Patent No. 5,743,325. The Examiner directs Appellants' attention to at least Fig. 1 and col. 4, lines 20-22 of said reference.

Appellants respectfully submit that in Esposto '325 there is disclosed a closed loop heat pipe transport design for a deployment application having a flexible section which connects to a payload structure and a deployable structure. The flexible section folds over itself while the deployable structure is stowed. Upon rotation of the deployable structure around a predetermined axis, the flexible section unfolds, with a portion of the flexible section passing through the predetermined axis. When the deployable structure has completed its rotation and is fully deployed, the components of the flexible section will lie in substantially the same plane, as previously pointed out by Appellants.

Appellants respectfully submit that in Fig. 1 of Esposto '325 there is no designation of a heat dissipating system having a remotely located heat source which is not located on the heat pipe panel wherein a loop heat pipe thermally coupled between the remotely located heat source and the heat dissipating system couples the heat generated by the heat source to the heat dissipating system as required in the claims of the instant invention. Likewise, as previously pointed out by Appellants, these features of the claims of the instant invention are no where to be found in col. 4, lines 11-14 of Esposto '325 wherein it is stated "Several possible positions of the serpentine sections 20

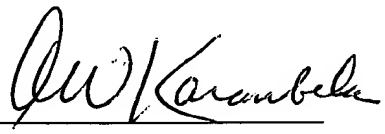
"are shown in Fig. 1. The serpentine section 20 is fastened on one end to the fixed radiator panel 14 and on the other end to the deployable radiator 10."

Appellants respectfully conclude that this recitation clearly states that the serpentine sections of the heat pipe are fastened on one end to a fixed radiator and on the other end to a deployable radiator, and no where is it expressly stated, implied or suggested that a loop heat pipe may be thermally coupled between a remotely located heat source and a heat dissipating system for coupling heat generated by the heat source to the heat dissipating system as set out in the claims of the instant invention.

Appellants do not at all understand and respectfully disagree with the Examiner's assertion that Appellants originally filed specification at page 1, lines 4-14 has been contradicted by any of Appellants statements regarding known prior art. Since the Examiner has not specifically pointed out or recited these statements, Appellants cannot further specifically address this assertion.

Appellants respectfully submit that all objections under 37 CFR 1.83(a) have been obviated and that rejections under 35 U.S.C. 112 have been overcome for the reasons cited above and that Appellants have shown that claims 1-6 are patentable over Esposto '325. Accordingly, Appellants respectfully request that the final rejection of the primary Examiner be reversed and that this application be allowed to go to issue.

Respectfully submitted,



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APPENDIX

Claims 1-6 as presented below are currently pending in this application.

1. A heat transfer system comprising:

a spacecraft comprising a heat dissipating system;

a remotely-located heat source disposed on the spacecraft at a location that is remote from the heat dissipating system and which is not located on a heat pipe panel; and

a loop heat pipe thermally coupled between the remotely-located heat source and the heat dissipating system for coupling heat generated by the heat source to the heat dissipating system.

2. The heat transfer system recited in Claim 1 wherein the loop heat pipe comprises flexible thin walled tubing coupled between an evaporator that is thermally coupled to the remotely-located heat source and a condenser that is thermally coupled to the heat dissipating system.

3. A spacecraft comprising:

heat dissipating system for radiating heat into space;

a remotely-located heat source disposed at a location that is remote from the heat dissipating system and which is not located on a heat pipe panel; and

a loop heat pipe thermally coupled between the remotely-located heat source and the heat dissipating system for coupling heat generated by the remotely-located heat source to the heat dissipating system.

4. The spacecraft recited in Claim 2 wherein the loop heat pipe comprises flexible thin walled tubing coupled between an evaporator that is thermally coupled to the remotely-located heat source and a condenser that is thermally coupled to heat dissipating system.

5. A heat dissipation method for use on a spacecraft comprising the steps of:

disposing a remotely-located heat source on a spacecraft at a location that is remote from a heat dissipating system and which is not located on a heat pipe panel;

thermally coupling a loop heat pipe between the remotely-located heat source and the heat dissipating system; and

coupling heat generated by the remotely-located heat source to the heat dissipating system by way of the loop heat pipe.

6. The method recited in Claim 5 wherein the loop heat pipe comprises flexible thin walled tubing coupled between an evaporator that is thermally coupled to the remotely-located heat source and a condenser that is thermally coupled to heat dissipating system.